Lat 40.14725 Lon -120.12988

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Date: July 23, 1996

Subject: Field evaluation of trees at the Sierra Army Depot, Herlong, CA. (Report # NE96-8)
To: CDR. Sierra Army Depot
DPW Pest Control
Attn: BGU - Art Gomez

At the request of Art Gomez, Sierra Army Depot Pest Control, I conducted a field evaluation of some of the pine trees located at the Depot site. The evaluation was conducted on June 11, 1996 and included examining trees at three locations. The objective of the evaluation was to examine the trees for signs and symptoms of insects and/or pathogens and to provide recommendations for overall tree health and maintenance.

Site 1. This area is at the entrance way to the Depot immediately to the south after passing the Administrative building. It is long narrow strip of grass and includes planted hardwoods and Jeffrey pines. The strip of vegetation receives water through a sprinkler system on a daily basis. The Jeffrey pines were planted in the mid-1970's and are about 30 feet tall. Copius resin flow was apparent around the mid-bole and higher on several of the Jeffrey pine trees. The resin flow was formed into pitch masses which completely encircled the bole of some trees. Small, newly formed, pitch masses were visible at the junctions of limbs and bole in the top portion of the tree. Several sequoia pitch moth (SPM), Synanthedon sequoiae, pupae were found in the pitch masses (See SPM biology). The large pitch masses encompassing the greater portion of the bole circumference are typical indicators of several years of infestation by SPM. The smaller, fresh pitch masses at limb junctions on the upper bole are more recent infestations (past 1-2 years).

Site 2. The second location we visited was the oval courtyard area which is in the middle of a housing complex. Planted hardwoods and conifers are located throughout the courtyard. This area also has grass planted in open areas and under the trees. Water is provided daily through a sprinkler system. The trees examined included lodgepole and ponderosa pine. The lodgepole pines have been heavily pruned and only have 1-2 years of needle compliment. Crowns were very thin and, in general, the trees are rather lacking in aesthetic value. There were no signs or symptoms of insects and/or diseases on any of the pines examined in this area.

Site 3. The last stop was to examine a row of ponderosa pines located along the fence line adjacent to a playground area. Trees are about 25 feet tall and planted about 15 feet apart. Although some trees had a minor infestation of pine needle scale, Chionaspis pinifoliae (see Biology), in general, the trees appeared to be in a healthy condition and growing quite vigorously.

Limiting Insect Damage

Sequoia pitch moth: Trees whose trucks or limbs have been mechanically injured are especially susceptible to infestation. Wounds inflicted by pruning, support wires, automobiles and lawnmowers are often hosts to SPM. It has been demonstrated that trees wounded just prior to or during the period when the moths are flying are far more likely to be attacked than trees wounded in the fall or early winter. Although accidental tree wounds cannot be avoided, those made by pruning can be controlled. Pruning should be confined to the time of year when it is unlikely to contribute to increased pitch moth attack. Other options mentioned in the literature for controlling or reducing SPM-related damage to high value trees include: physically removing the larvae and treating the wounds with a wound dressing and pesticide treatment on the trees during the period when the moths are flying.

Pine needle scale: At present the pine needle scale population does not warrant treatment, however, these trees should be examined periodically to monitor the level of infestation and damage. Although tree mortality is not usually associated with the pine needle scale, the effects of feeding by high populations of scales over consecutive years can weaken trees and predispose them to attack by bark beetles. Direct control of the pine needle scale in forested environments is generally not practiced or needed, but protection of individual landscape trees may warrant special consideration. Chemical treatments are available to control scale populations and should be targeted at the crawler stage.

General Tree Maintenance

The key goals for those responsible for vegetation management in a landscape setting include the health, safety, function and attractiveness of the trees. Tree health is extremely important for a tree to be able to grow and develop to its potential and to be able to withstand and recover from unfavorable environments, noninfectious disorders, diseases, insects and other pests and unwise cultural practices. Strong structure is essential for large trees to function and be safe. An integrated approach for maintaining healthy trees includes; managing nutrient, water and aeration levels; pruning; monitoring tree performance; preventing or moderating tree problems and knowing when a tree should be replaced. Such an approach will improve landscape performance and function, increase the efficiency and effectiveness of maintenance and preserve more existing trees.

Please find two enclosures with this report. "A Technical Guide to Urban and Community Forestry" was produced to help communities develop, manage and protect their forest resources. It contains technical information about growing trees in the relatively adverse urban environment. Also enclosed is a brochure on "How to prune trees" which discusses how, when and why to prune. I hope you find information in these helpful. If you have any questions or

request additional assistance please contact Sheri Smith at 916-257-2151 ext. 6667.

Sheri Lee Smith
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INSECT BIOLOGIES

Sequoia pitch moth

Sequoia pitch moth adults are black and yellow, resemble a wasp, and are characterized by having narrow wings that tend to be transparent and unscaled (hence the name "clearwinged" moth). SPM attacks several species of pines. The moths appear during mid-summer. After mating, the females usually lay their eggs adjacent to tree wounds. The larvae bore into and feed in the cambium region causing copius pitch masses to form on the bole. New galleries are frequently adjacent to older attacks or other wounds. Large masses of pitch mixed with boring dust and frass appear at the entrances. About half the population requires 1 year to complete a life cycle; the other half requires 2 years. Moths always emerge in the summer. Pupation occurs within the resinous mass. Attacks are frequently associated with injuries and at the junctions of the limbs and the bole. It is generally considered an ornamental pest but repeated attacks over several years can cause significant damage, particularly to young, small-diameter, trees.

Pine needle scale

Several of the armored scales attack western forest trees. A few cause significant damage but they are not considered to be major pests. Eggs are rusty brown. The scale covering the adult females is white, 2.5 mm long and oval in shape. The armored covering on the male is about one-third as long as that of the female. The crawlers (nymphs) are pink to pale yellow and have well developed legs and antennae. Typically winter is passed in the egg stage beneath the parent female scales. These hatch soon after plant growth starts and the resulting crawlers disperse before settling. Scale feeding causes yellowing and browning of infested needles. Infestations rarely kill trees, however, scale feeding can weaken trees and likely slow tree growth.